

Questions

1. Requirements for repermitting existing wells as Class VI injectors

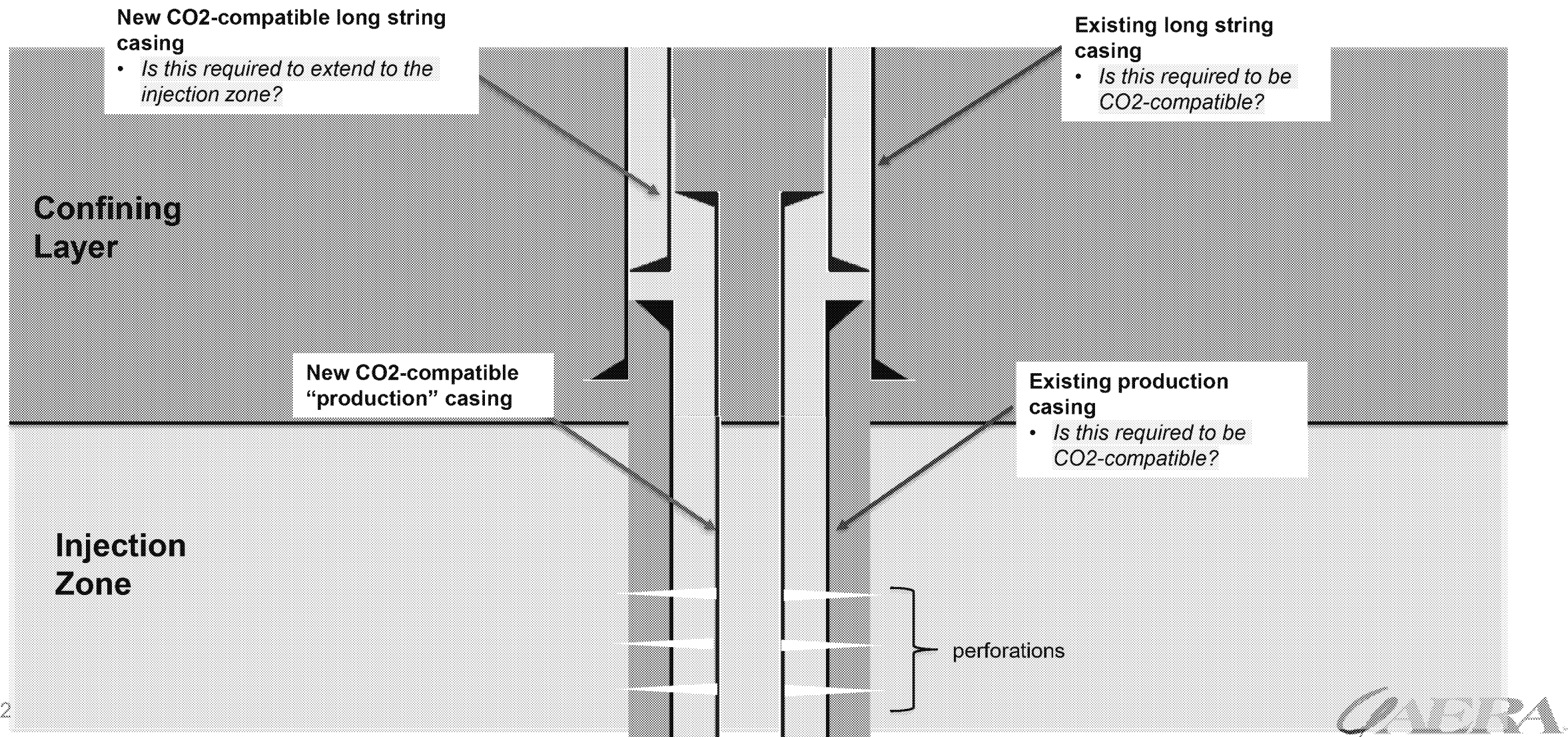
Aera is exploring the option of repurposing existing 64 Zone oil/gas producers as Class VI injection wells.

- **Does EPA have any concerns with repermitting oil/gas production wells from the early-to-mid 1900's as Class VI wells, provided they can be designed to meet the general requirements of CFR 146.86 (prevent movement of fluids, permit testing & monitoring)?**
- **CFR 146.86 also describes casing and cementing requirements. In the case of re-permitted wells, to what extent do these requirements apply to the original wellbore?**
 - *Compatibility:* If a CO2-compatible casing string were cemented within an existing wellbore, must the original well's casing also be constructed with CO2-compatible materials?
 - *Casing Depth:* In many cases, the long string casing in existing wells only extends into the confining layer, just above the injection zone, and prevents a new long string casing from reaching the injection zone. Must the new long string casing extend to the injection zone?

See diagram on next slide



Well Construction Example



Repurposed Well Construction (cont.) – Added after call on 7/18

- A review of 'Considerations for Conversion of Other Well Types to Class VI' (page 33) revealed that the complete set of Class VI well construction requirements [40 CFR 146.186(a),(b) and 146.87(a)] may not always apply to repurposed wells, provided "the owner or operator can demonstrate to the UIC Program Director that the well under consideration was engineered and constructed to meet the requirements of 40 CFR 146.86(a) and ensure protection of USDWs, in lieu of requirements at 40 CFR 146.86(b) and 146.87(a)."

146.86 Injection well construction requirements.

(a) General. The owner or operator must ensure that all Class VI wells are constructed and completed to:

- (1) Prevent the movement of fluids into or between USDWs or into any unauthorized zones;
- (2) Permit the use of appropriate testing devices and workover tools; and
- (3) Permit continuous monitoring of the annulus space between the injection tubing and long string casing.

- The guidance document goes on to describe, "Wells that are converted to Class VI do not need to meet all of the logging and pre-/post-construction requirements that apply to newly constructed Class VI wells, specifically requirements that focus on pre-construction logging and cementing at 40 CFR 146.86(b) and 146.87(a)"

Must repurposed well construction only fulfill the requirements of 146.86(a)?

OR

Must repurposed well construction meet all Class VI well construction requirements [40 CFR 146.186(a),(b) and 146.87(a)], except those pertaining to logging and cementing?

The former may allow for the well construction example (slide 2), while the latter may preclude it.

Questions (cont.)

2. Strategy for including back-up candidate Class VI wells

Aera has identified several candidate wells that could be repurposed for Class VI injection. Anticipating that further evaluation will be needed to fully assess the wells' condition and that not all candidates may remain viable, **how does EPA recommend accounting for backup Class VI well candidates that could replace any that drop out during testing/construction?**

Questions (cont.)

3. Monitoring well density/location guidance?

- Is there guidance available on monitoring well density/location/frequency, distance from injection and or distance from AoR boundaries?
- How does the Maximum Monitoring Area (MMA) discussed in the EPA's GHGRP Subpart RR relate to monitoring requirements in the Class VI program – specifically within the ½ mile buffer surrounding the free phase CO₂ plume?

Questions (cont.)

4. Financial Responsibility Demonstration

Aera is jointly owned by Shell (52%) and ExxonMobil (48%) and we plan to request they provide a corporate guarantee for the Class VI Financial Responsibility Demonstration. While the Financial Responsibility guidance documents describe that a corporate guarantee must come from a JV partner with a majority voting stock (>50%), **would a corporate guarantee from each member company for their respective ownership percentage be an acceptable approach?**

Questions (cont.)

5. Process/timeline for permitting additional Class VI wells in the future

Aera plans to include all foreseeable Class VI wells for this project in our application, however, given the growing excitement around CCS and the anticipated emergence of new CO₂ sources/providers, it is possible that Aera would like to expand injection capacity in the future.

What would be the process and anticipated timeline for permitting additional Class VI wells to support a project whose site has already gone through EPA technical review?

- **Does EPA have any concerns with drilling additional CO₂ injectors within the AoR, after injection has commenced?**

Questions (cont.)

6. GHGRP Subpart RR - MRV Plan

Aera is working to become familiar with the Monitoring, Reporting, and Verification (MRV) requirements of subpart RR of the Greenhouse Gas Reporting Program (GHGRP) to ensure that the proposed monitoring plan fulfills both Class VI and Subpart RR requirements.

- Does EPA have any published guidance on developing an MRV plan?
- Do you recommend pre-application consultation regarding development of an MRV Plan?
 - If so, when would be appropriate?
 - Can you direct us to the appropriate contact?